

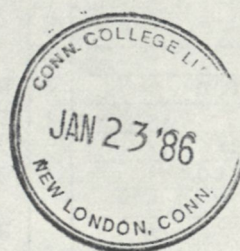
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Thanksgiving in Connecticut

In this issue:

Hammonasset Volunteers
Superfund Simplified
Winter Bird Feeding
Living Fossils
"The Death Star"
and much more.



Citizens' Bulletin

November 1985

Volume 13, Number 3 \$5/year

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The Wider View

The November Theme

By Robert Paier

Regular readers of the Citizens' Bulletin know that in this space, we have usually invited "guest speakers," experts in a given area of environmental work, to sound the theme of each issue. In this, the November issue, no single area seemed to stand out, and hence there didn't seem to be anyone really appropriate to ask to do this column. The answer to that is, as always, to do it yourself. OK. Why not? Part of the territory.

There is, of course, a theme to this issue of the Bulletin. It is the same theme that appears in all issues, again and again. It's what we're doing here, what we're all about, what everybody who is concerned with the environment is all about. The theme is that it is our responsibility to find out what's going on and to do what we can to make things better. That's it. The recurring theme. Very simple.

That theme is quite apparent in this issue, I think. We see it right off the bat in Martha Kelly's article on volunteers at Hammonasset Beach State Park. Taking on responsibility, learning, giving time and energy. Kids seem to be good at that. They don't have to struggle so much as we adults do. For them it's very natural, even fun.

There is a short article this month, submitted by Linda Sobocinski of the Regional Water Authority, describing how some handicapped people experience the natural world. A blind lady touches a horse. The Water Authority has taken on responsibility here, and that makes things a little better.

There is a rather interesting dimension to Nancy Kriz's article on birdfeeding because, in fact, there are those who feel that feeding birds in the winter is not environmentally correct. That's a real question with, as yet, no definitive answer. The point is, however, that even though we don't know it all, we do the best we can. And if you follow Nancy Kriz's instruction that once begun, the feeding should not stop, then you will be acting responsibly.

So, that's our theme here -- be responsible, try to find out what you can, and do what you can. Nothing new. All of us here, the ones who put this magazine together, the ones about whom it is written, and the ones who read it, already understand that. That's what brings us together.

That's enough, then. Thanks for reading the Bulletin. Hope you enjoy this issue.

Happy Thanksgiving.



A study in marsh ecology: Richard Carroll and Junior Naturalists sample the snail population on the salt marsh.

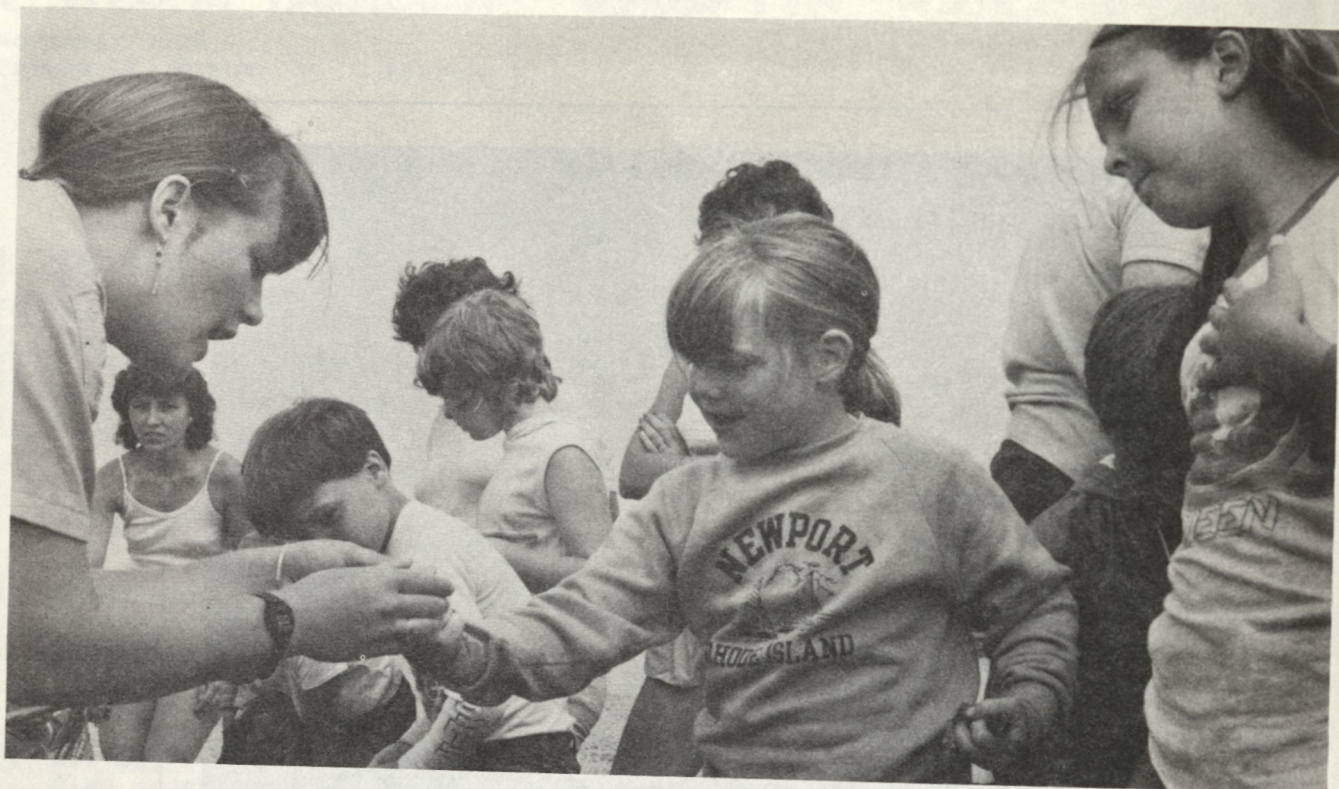
Gifts of Time and Energy

Volunteers assist in the programs at Meigs Point Nature Center

Text and Photos by Martha Kelly

Meigs Point Nature Center, at Hammonasset Beach State Park, has been the recipient of gifts of time, effort, and creativity from a group of loyal young volunteers, many of whom return summer after summer. Nature Center Director Richard Carroll reports that many of the Center's programs would be impossible without young volunteers.

Meigs Point houses a representative group of local animals and sealife on display. "Volunteers catch the worms, flies, and seafoods eaten by the animals at the Center," says Carroll. Besides foraging regularly for these animals' food, the Center's volunteers provide them with regular care, to include the cleaning of tanks and the hauling of fresh supplies of sea water, all under the supervision of the Center's naturalists. All of the animals are returned



Discovery on the beach: Naturalist Lauren Parmelle identifies sea plants and animals brought in by the net.

to their natural habitats at summer's end, or sooner.

Consistency and Commitment

Former Center naturalist, Cindy Ortiz, who volunteers her time as the Center's publicist, reports that the young people are "the core of our programs." According to Ortiz, the Center had more than 25,000 visitors in 1985. The volunteers' consistency and commitment have allowed the Center's staff to enhance the programs and to spend more time providing environmental education.

One of the programs most benefited by the volunteers is wildlife rehabilitation. Without the foraging efforts of many young hands, the seven-week-old orphaned raccoon, or the disoriented seagull brought in by a lifeguard, could not be sustained at the Center until ready for release into the wild. The volunteers also explain to over-friendly visitors that the baby raccoon must not be handled by humans if he is to retain his wildness after release.

Carroll is determined that the Center will provide "sound environmental education, not just entertainment." For the past two years a major program of renovation and improvement has been under way to upgrade the Center's visual

displays and programs. Dioramas and exhibits depicting the vicinity's varied habitats and wildlife are in preparation under the direction of Rita Carroll, the Center's artist. She has conceived a chronological series of dioramas to represent the changes in habitats, use, and appearance of the nature center's site over the centuries, from the time it was the summer campground of the Hammonasset Indians through its present use as a state park.

The "Junior Naturalist" Program

The Junior Naturalist Program is at the heart of the Meigs Point programming. Designed for vacationing campers, it offers six different sessions for children eight to 14, one session on each of the six major habitats to be found within the park. Any youngster who attends five sessions is recognized with a certificate from DEP, proclaiming him or her a "Junior Naturalist." This program has been the source of many of the Center's volunteers, as the young people graduating from the program have sought to maintain a relationship with the nature center. Ortiz comments, "The interest they take in the Center is real and it continues. The kids don't treat it just as a place to hang out."



Lauren Parmelle and volunteer Traci Brancaci drag the net for sea life during the sandy beach nature walk.

The Nature Center is open during the summer months from 10:00 a.m. to 5:00 p.m., Tuesday through Sunday. This six-day work week dictates that much of the work of renovation be carried out in evening hours. Campers and regular volunteers have contributed much of the carpentry during after-hours work parties, working side by side with the Center's staff, who themselves put in many hours beyond the regular work week.

Coming Back Year After Year

The strength of this commitment is evidenced by the number of people who come back year after year. Carroll reports that many families return to Hammonasset primarily to make it possible for their children to volunteer at the nature center. Fourteen-year-old Tracy Brancaci has spent summers at Hammonasset as long as she can remember. Since participating in the Junior Naturalist Program five years ago, she has become an annual volunteer. "Every year," says Tracy, "I spend half my summer at the Center." This involvement and her special interest in sea life has engendered a plan to become a marine biologist. Tracy and her 11-year-old sister Michelle, plus several new recruits from the camping population, will arrive each day well before the

Center officially opens, to gather fresh sea water for the animals in the Center's tanks.

Carroll states that the volunteers' help allows the permanent staff to devote more time to programming enhancements, such as increases in the number of daily nature walks and the addition of others, such as Saturday bird walks and Sunday morning guided canoe trips into the marshes. Many visitors to the park now come for the express purpose of taking part in these popular programs. The contribution of the volunteers has made this possible.

The "Pied Pipers" of Hammonasset

Another strategy aimed at attracting the beach crowd to the Center is the practice of sending a naturalist, in uniform and carrying a large net, out onto the beach at random times. Such figures are "pied pipers," attracting both children and adults on their impromptu excursions. Such expansions of the Center's programming would be out of the question with its present staffing, says Carroll, if it were not for the regular aid of the Center's energetic young volunteers.

Additional contributions of these young people range from weeding and watering the garden and sweeping the Center, to artwork and independent



John DiOrio finds a specimen for his mushroom collection.

research projects. Volunteers have provided elbow grease for such conservation efforts as litter patrol, erosion control, and the construction of blue-bird nesting boxes.

The First Step Toward a Career

An informal career path has developed out of the experience for at least one particularly committed young person. John DiOrio, now 17, began as a Junior Naturalist and became an annual volunteer after his age and experience outgrew the program. In 1984, his fifth year as a volunteer, he gave his entire summer to the Center, in order to fulfill a requirement of his high school program in Vocational Agriculture. His field expertise had grown to such a point that he conducted Junior Naturalist sessions.

He returned in 1985, after high school, to learn that his efforts would receive a tangible reward; he had been selected for employment with the Center as a naturalist. John's educational plans are now focused on college-level environmental study. Enthusiastic praise from adult attendees at one of his "Rocky Beach" nature walks suggests that John may well have a future in the field.

The Long Range Goals

Cindy Ortiz wants "to see the interpretive programs developed into something bigger and better and more permanent." Toward that goal, she has begun to look into the creation of an adult support group, "Friends of Meigs Point Nature Center." Observing that the young people "have a lot of good ideas," she hopes to supplement their enthusiasm with adult professional and organizational skills.

Adult volunteers and area businesses have already made important contributions of time and materials, but, says Ortiz, "We need more adults to help preserve the area and promote our programs."

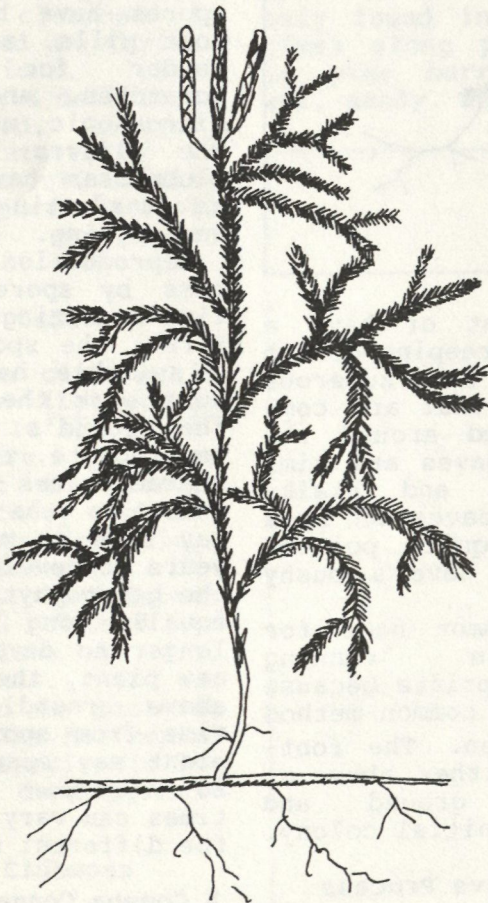
Too many visitors to the park, she feels, haven't known "what that building is up on the hill. Through public relations we can change that. You've got to think big to make little things happen."

The enthusiasm at Meigs Point is as tangible as the pungent salt air over the marsh. It is a rich atmosphere for growth, as the generations who farmed and fished here in the past knew. During the winter months, interested persons may write to Meigs Point Nature Center, c/o Park Manager, Hammonasset State Park, Box 271, Madison, Ct. 06443. ■

The Clubmosses

Connecticut's Living Fossils

Text and Illustrations by Penni Sharp



Tree clubmoss

In Connecticut, November brings the onset of winter. There may be one or two more mild days, and we really don't have to worry about snowfall yet, but in November, the days do grow short, chilly, and depressing. Few leaves remain upon the trees, and the landscape seems to settle into itself, bracing for winter.

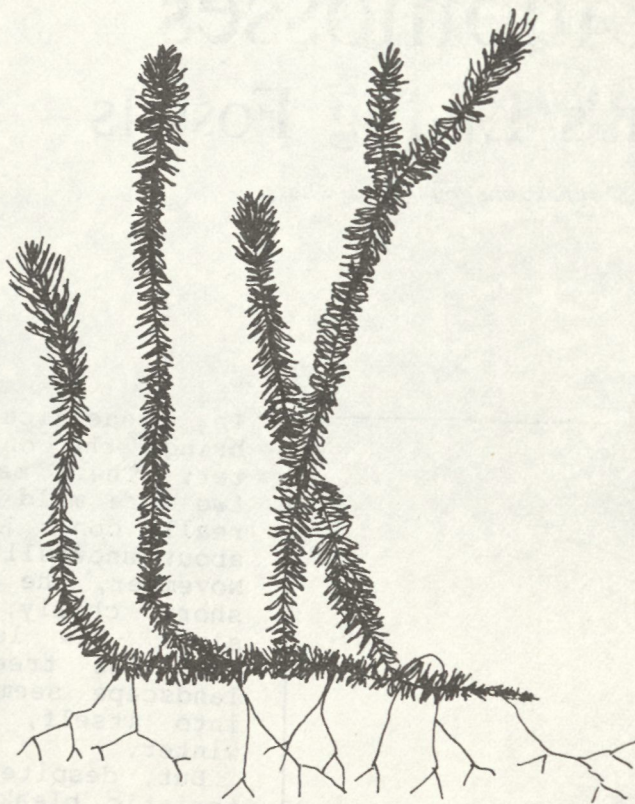
But, despite its characteristic bleakness, November can be a wonderful month to hike in the woods. No biting or stinging insects to contend with, and no hot sun. By now, many plants and animals are dormant or becoming so, and plants that may have escaped notice in the full burgeoning of spring and the lushness of summer may now be the only ones visible in the November woods.

The cheerless days of November provide good opportunities to become acquainted with a fascinating group of plants, the clubmoss family, or Lycopodiaceae. These small evergreens are fairly common in Connecticut woodlands.

**A Plant from
an Ancient Era**

Clubmosses are among the earliest vascular plants

Shining clubmoss



(that is, plants which are characterized by a system of specialized conductive and supportive tissue) on earth. Fossil records indicate that relatives of the clubmosses were in existence during the Carboniferous era.

The ancient clubmosses were tall, treelike species. Along with giant horsetails, tree ferns, and other plants, they formed vast forests which ultimately became coal deposits and oil fields. Today's clubmosses are minute by comparison to their early relatives. It's exciting to try to imagine an ancient world filled with plants of this same structure, but on a vaster, gigantic scale.

Clubmosses are evergreen perennial plants that grow

either upright or have a trailing or creeping growth habit. They have numerous small leaves that are compactly crowded around the stem. The leaves are simple, entire, and stalkless. The leaves on most species are quite pointed and some may have a bushy tip.

Another common name for clubmoss is "running pine," appropriate because running is a common method of propagation. The rootstock runs either above or below the ground and spreads the initial colony.

Reproductive Process

Actual reproduction for all species of clubmoss is accomplished through the production of spores. The clubmosses are "homospor-

ous," having one type of spore, neither male nor female. The spore cases are commonly borne in small cones, or strobili, which are often arranged in clusters at the ends of the stems.

Vast numbers of spores are produced. They usually become ripe in late summer and early fall. If you have access to a microscope, you may enjoy examining the spores more closely. They are usually yellow to yellowish-brown and somewhat kidney-shaped.

These spores have been used historically in a number of ways. Perhaps the best-known use was as a flash powder for early photographers. In addition, the minute dust-like spores have been used to coat pills, as a soothing powder for cuts and scratches, and in making microscopic measurements. The leaves of certain clubmosses have been used as mordanting agents in wool-dyeing.

Reproduction of a clubmoss by spores can be a time-consuming event. First, the spore must find a suitable habitat. Some must work their way below the ground's surface. The gametophyte, the form which characterizes the next phase in the life cycle, may take as many as seven years to develop. In turn, the gametophyte may take an equally long time or even longer to develop into the new plant, the part we see above ground. Thus, the time from spore to mature plant may span as many as 20 years. Development times can vary widely among the different species.

A Common Connecticut Plant

In The Preliminary Checklist of the Vascular Flora of Connecticut, Dowhan lists nine species of clubmosses present in our

state. Thus, it is quite possible to recognize all the members of this plant family growing here. Some are fairly common and others, such as the bog clubmoss (*Lycopodium inundatum*), are found only in specialized habitats.

Tree Clubmoss

Tree clubmoss (*Lycopodium obscurum*) is probably the best known of our clubmosses. It looks like a miniature pine tree with erect cones projecting from its uppermost branches. It grows throughout Connecticut woodlands, preferring damp woods along the edges of swamps.

These little trees sprout from the underground stem, often forming large colonies. This clubmoss is frequently used in Christmas decorations. Such practice should definitely be discouraged, however, and those interested in conservation should neither collect nor purchase this clubmoss for decorative purposes.

Ground Cedar

Another common clubmoss is ground cedar (*Lycopodium tristachyum*). It has a similar structure to tree clubmoss, but the leaves are more leathery and are arranged along spreading, flat-topped branches. The cones extend, candelabra-like, upward. Ground cedar is a plant of dry, shady woodlands. It can also be found in pastures and fields. The horizontal stem of this species is located fairly deep beneath the ground.

Shining Clubmoss

A handsome clubmoss found in our area is shining clubmoss, or *Lycopodium lucidulum*. It is deep green in color. Single

stems, which may or may not branch, rise up from a rather short horizontal stem. The leaves, short by the standards of most plants, are long ($3/8$ of an inch) for the members of this family, and are narrow and lance-shaped. The lower leaves may be reflexed downward, but the leaves at the top of the stem grow upwards. The kidney-shaped spore cases are borne in the axils of the upper leaves. Shining clubmoss is usually found in rich, moist woods or along shady streambanks.

Bog Clubmoss

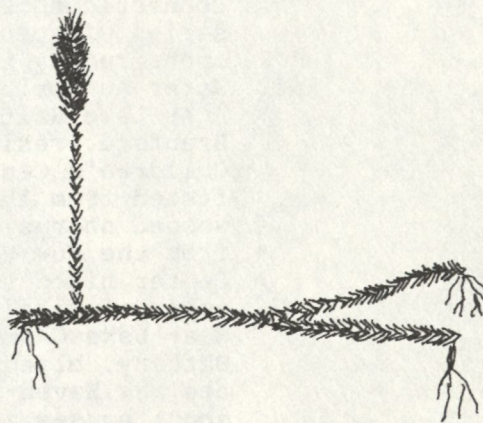
Bog clubmoss (*Lycopodium irundatum*) is more difficult to locate. This is largely due to its restricted habitat, as it is only found in bogs, sometimes along pond margins, in pine barrens, and in wet, sandy, acid areas. It

is also relatively small. Its horizontal stem creeps along the surface of the ground, rooting at intervals. Vertical stems arise somewhat sparsely, and are slender with very bushy tops. The spore cases are located in the bushy tops that crown the clubmoss.

Living Fossils

The clubmosses are truly extraordinary plants. In observing these living fossils, with their strange and primitive forms and reproductive cycles, we can still get a sense of what this planet was like, millions of years ago.

For those who wish to study the *Lycopodiaceae* in depth, there have been recent revisions to the taxonomy, and one should contact the Connecticut Botanical Society for this information. ■



Bog clubmoss



A Special Program for Special People

By Sylvia Sobocinski, Public Affairs Consultant, Regional Water Authority

Recreational activities for handicapped people are growing in south-central Connecticut through a series of special programs sponsored by the Regional Water Authority.

At Lake Saltonstall, in Branford, residents of the Children's Center of Hamden fished from the lake's wooded shores, and adults from the New Haven Regional Center hiked some of the acres of winding trails. Near Lake Chamberlain, in Bethany, blind people from the New Haven area learned about horses and took a hayride along the equestrian trails.

These visits were made possible through the Authority's special event permit. A wide range of area organizations, including schools, sports

clubs, ski clubs, boy scouts, girl scouts, environmental organizations, and handicapped groups, have taken advantage of the opportunity to visit the waterlands with this special permit.

"Plans are also under way for creating a handicapped-accessible interpretive nature trail at our Racebrook Trails in Orange and Woodbridge," said Thomas C. Jackson, Regional Water Authority Manager of Public Affairs.

New Equestrian Program Meets Special Needs

The commitment to meeting the special needs of handicapped people is reflected in a recent agreement with the Bethany

*Photo: A group from the North Central Regional Center enjoying a nature walk at the Authority's Lake Saltonstall trails.
(Photo by Sandra B. Billings)*

Horsemen's Association to open seven miles of trails along the Lake Chamberlain Reservoir in Bethany for public horseback riding.

"Under the agreement, the Bethany Horseman's Association will sponsor a special equestrian event for the handicapped each year," Jackson said.

The Regional Water Authority has also applied for a federal grant to increase handicapped-accessibility at some of the region's most beautiful natural areas. The effort would benefit approximately 1,000 handicapped individuals in south-central Connecticut. The Authority's application to the U.S. Department of Education is designed to initiate special recreation programs for handicapped individuals.

Commitment to Improvement Continues

"We're excited about the

significant contribution this grant would make in furthering our efforts to promote the use and enjoyment of our resources by individuals with special needs," Jackson said.

"This one-year grant would enable us to identify the special needs of the handicapped community, to get a program established, and to develop a long-range funding plan for continuing and expanding recreation opportunities," Jackson added.

With or without grant funding, the Authority intends to continue expanding recreational activities offered to individuals with special needs.

"We are working to become a leader among water utilities in developing educational and recreational opportunities," Jackson said. "We hope our efforts can serve as a model for other utilities.

Throughout the country, thousands of acres of open land are owned and maintained by water utilities. We believe these lands can be opened for public and handicapped recreation without neglecting our primary purpose: providing pure water at reasonable rates."

For more information on obtaining trail-use, fishing, or horseback riding permits, or on arranging special visits to the waterlands, call the Authority's Recreation Department at 624-6671, Ext. 247, or stop by their headquarters at 90 Sargent Drive in New Haven. ■

Photo: Meet the Breeds, co-sponsored by the Regional Water Authority, the Bethany Horsemen's Association and the Lions Luncheon Club. (Photo by Virginia Blaisdell)



Winter Bi

Some useful tips to

By Na
Illustration by

During the long winter months, it is enjoyable to observe varieties of birds at a feeding station. Because of migration, winter bird watching is entirely different from its summer counterpart, as bird populations in Connecticut change dramatically according to season.

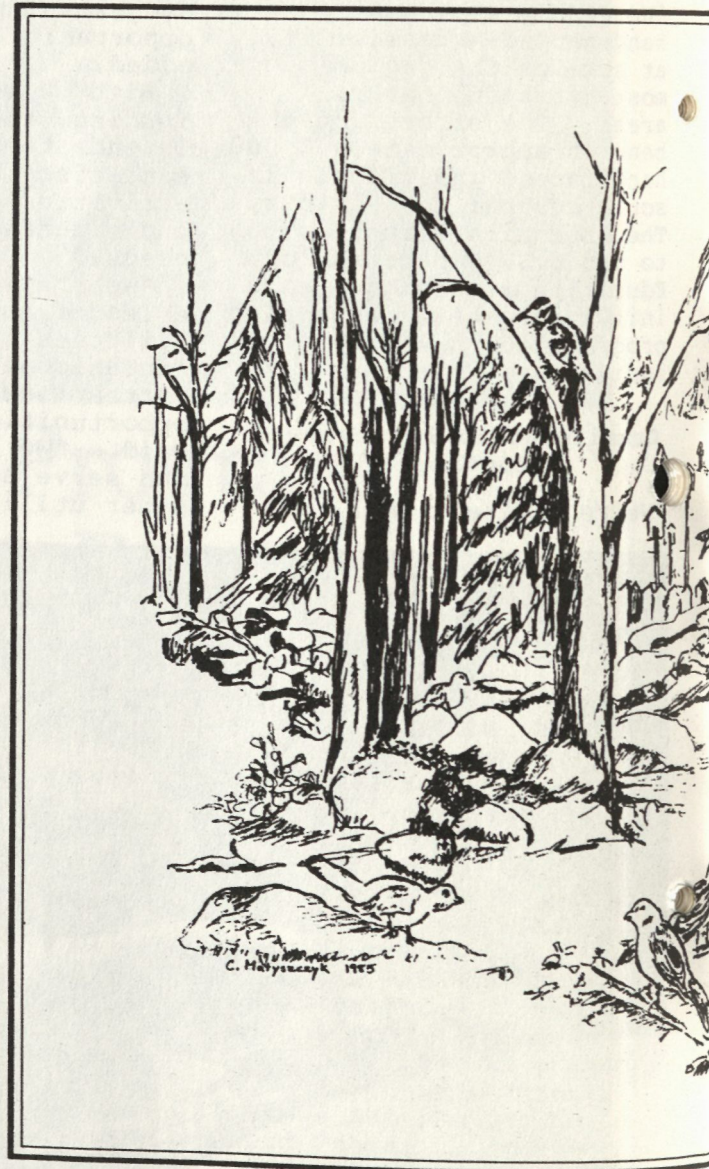
Most species whose diets are dependent upon flying insects, earthworms, caterpillars, grubs, and other insect larval stages migrate southward during late autumn. Swallows, warblers, thrushes, catbirds, orioles, flycatchers, phoebes, tanagers, and other familiar summer birds depart from Connecticut. However, species which summer even farther north migrate to our area to winter. For example, evening grosbeaks (*Hesperipona vespertina*) are rarely seen during the summer since their breeding grounds are in northern New England and Canada. During late fall and early winter, however, grosbeaks move southward and, if sufficient food supplies are available, flocks of these large, brightly colored birds will remain in one place throughout the winter.

Other species which winter in our area, after having summered north of Connecticut, include pine siskins, redpolls, and juncos. They may arrive anytime between November and January.

Creating an Attractive and Sheltered Habitat

Not all birds like the same foods or have the same feeding habits. To attract many species, one must provide a variety of foodstuffs and present them in different ways and at different times. The avid birder usually begins making food available in late September or early October. Although birds still have natural food supplies at this time, they will locate a feeder and become accustomed to it. Species which might otherwise fly south, like cardinals, may stay if they are aware of a steady food source.

Creating an attractive and sheltered



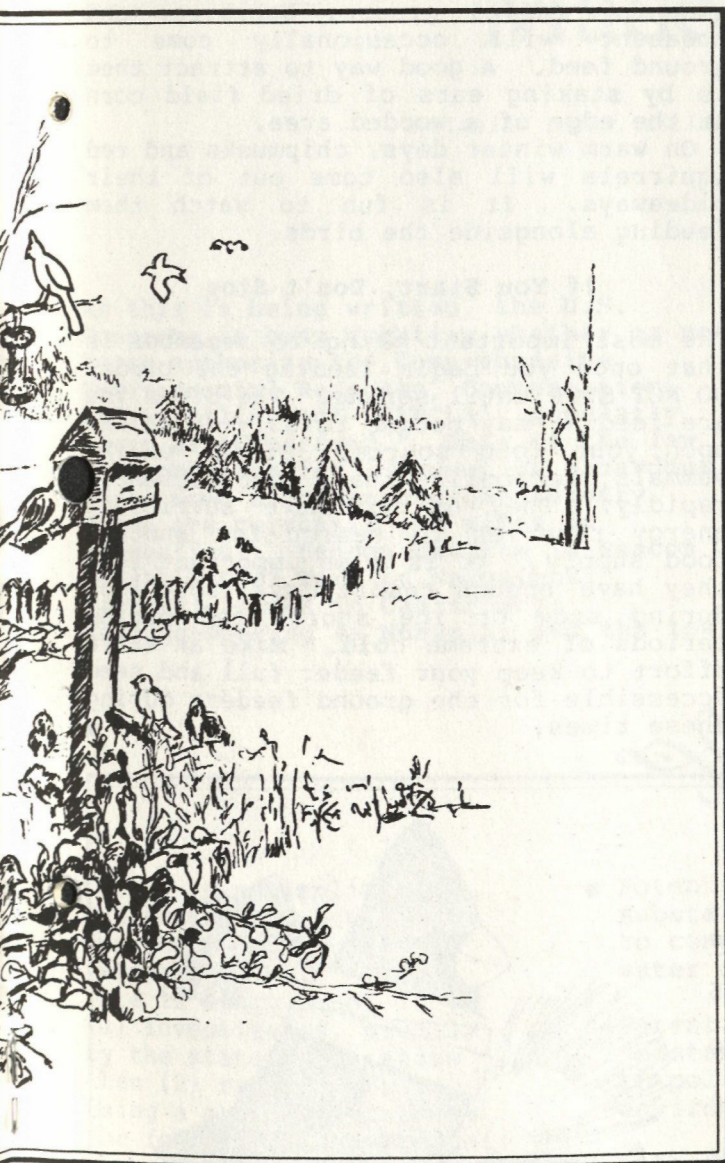
habitat in your yard should really be the first step in an overall plan for winter bird feeding. Most birds are comfortable in an atmosphere where they can find protection from snow and cold winds. Trees and shrubs will provide this necessary cover, and selected ones also produce fruits and seeds which

Bird Feeding

help you get started

by Kriz

Carol Matyszczyk



serve as foodstuffs during the cold months. Some of these are dogwood, flowering crab, holly, ash, yew, elder, honeysuckle, barberry, highbush blueberry, and arrowwood. Evergreens, of almost any type, established near your feeding station will furnish winter shelter.

Once a suitable habitat has been created, types of food offerings must be chosen. Sunflower seed probably heads the list in terms of popularity among the majority of birds seen at feeders in southern New England. It is preferred by cardinals, jays, chickadees, nuthatches, tufted titmice, and grosbeaks. Any conventional type of feeder will successfully dispense sunflower seed.

Feasting on Thistles

The various species of finches and their relatives, the redpolls and pine siskins, enjoy thistle seed. These diminutive birds entertain us with song and color all winter long. Both purple finches (*Carpodacus purpureus*) and pine siskins (*Spinus pinus*) inhabit evergreen forests but will emerge to feast on a consistent supply of thistle seed.

Another visitor to a thistle feeder will be the American goldfinch (*Spinus tristis*). These are the tiny yellow and black birds we enjoy during summertime who seem to be constantly chattering during flight. They fly in a distinctive undulating manner. They are often not recognized during the winter because the males' bright yellow plumage is replaced by a more camouflaged dull olive coloration.

Thistle seed is quite expensive. There are feeders made especially for it. A thistle feeder is a worthwhile purchase because the seed is so tiny that it will spill out of regular feeders, and it is too expensive to waste.

Suet in a Winter Diet

Some birds rely upon heavy concentrations of fats in their winter diets. Woodpeckers are heard but seldom seen in the summer woods. If suet is offered to them during cold weather, they will cease pecking on tree trunks in search of insects and depend upon fats for their energy source. There are three species of woodpeckers most commonly

observed: the red-headed, the downy, and the hairy. The downy and hairy are quite similar in appearance, with the hairy being somewhat larger. The males of both species possess a tiny red spot on the backs of their heads. The females lack this conspicuous marking.

Chickadees, nuthatches, starlings, and juncos will also be seen feeding on suet. Suet filled with sunflower and mixed seed is commercially available. However, any type of fat from meat trimmings will suffice. Bacon grease rolled in mixed seed is also good. Mesh nets and metal suet cages may be purchased. An old onion bag is equally effective.

Mixed bird seed usually contains sunflower, white millet, cracked corn, and peanut hearts. Mourning doves, song sparrows, white-throated sparrows, and cardinals appreciate the millet. Mourning doves (*Zenaidura macroura*), with their gravel-filled gizzards, will digest the cracked corn. Peanut hearts are favorites with many birds including doves and jays. While some of these birds will perch to feed from an elevated or suspended feeder, doves, cardinals, and jays are more "at home" foraging on the ground. Grosbeaks are also ground feeders, as are cowbirds, starlings and the grackles and red-winged blackbirds when they arrive in the spring.

A Cardinal in Winter

A male cardinal (*Richmondia cardinalis*) perched in a snow-covered evergreen tree has to be one of the loveliest of winter sights. Audubon wrote that, "In rich-

ness of plumage, elegance of motion, and strength of song, this species surpasses all its kindred..." Cardinals feed both earlier and later in the day than other birds. Along with doves, they will arrive at dawn and twilight to forage. Scatter sunflower and millet on the ground or on top of the snow cover for them just after the sun has set (and after the squirrels and jays have retired for the evening). If you truly wish to please your cardinal pair, offer them raisins!

In a winter with heavy snowfall amounts, ruffed grouse, bobwhite, and pheasant will occasionally come to ground feed. A good way to attract them is by staking ears of dried field corn at the edge of a wooded area.

On warm winter days, chipmunks and red squirrels will also come out of their hideaways. It is fun to watch them feeding alongside the birds.

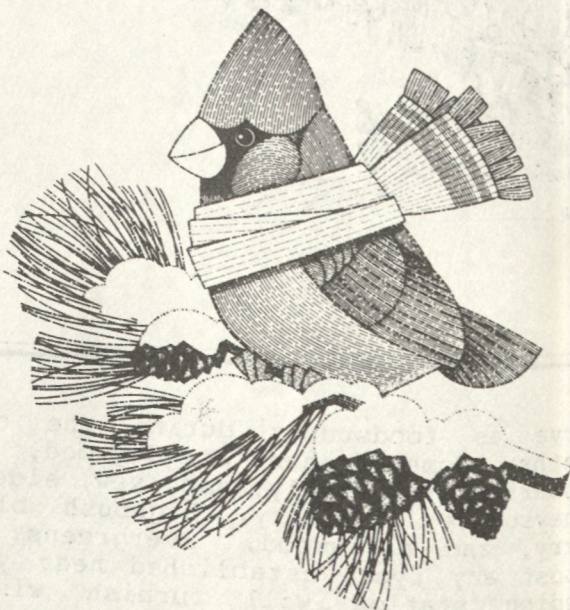
If You Start, Don't Stop

The most important thing to remember is that once you begin feeding the birds, DO NOT STOP until spring. The birds you are feeding may become totally dependent upon your food source. Birds, unlike mammals, metabolize their food extremely rapidly. They do not have sufficient energy reserves to search for another food supply. It is also important that they have enough readily available food during snow or ice storms and during periods of extreme cold. Make an extra effort to keep your feeder full and seed accessible for the ground feeders during these times.

BIRD SEED PRICE LIST

Type of Seed	# of Pounds	Price
Regular Sunflower	50 lbs.	\$13.95
Black Sunflower	25 lbs.	\$ 8.00
Thistle Seed	10 lbs.	\$ 7.90
Mixed Seed	100 lbs.	\$15.95
Suet Cakes	8 oz.	\$ 1.25

These are approximate prices for the 1985-1986 winter season for seed purchased from most Connecticut agricultural supply stores.



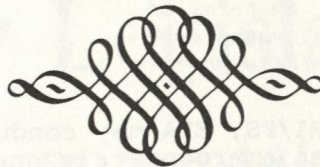
The Superfund Process Made Simple

By Leslie Lewis, Citizens' Participation Coordinator

As this is being written, the U.S. Congress is busy debating whether or not to re-authorize the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), popularly known as "Superfund." This is the law that provides for cleanup of hazardous waste dump sites around the country. There are currently six sites in Connecticut: Beacon Heights in Beacon Falls; Laurel Park in Naugatuck; Yaworski Lagoon in Canterbury; Kellogg-Deering in Norwalk; and the town

landfill and Solvents Recovery Service, both in Southington.

Superfund, while helping to cleanup sites that might otherwise remain contaminated, has not been without its critics. Many people feel that the process is too slow and cumbersome and does not adequately protect health and property. The Environmental Protection Agency (EPA) has put together a brief description of the Superfund process, which may help to explain why it is sometimes so time-consuming.



This is a simplified explanation of how a long-term Superfund response works. After a site is discovered, it is (1) investigated, usually by the state. The state then (2) ranks the site using a system that takes the following into account:

- Possible health risks to the human population.
- Potential hazards (e.g., from direct contact, inhalation, fire and/or explosion) of substances at the site.

- Potential for the substances at the site to contaminate drinking water supplies.
- Potential for the substances at the site to pollute or harm the environment.

If the site's problems are serious enough, it will be listed on the National Priorities List (NPL), a roster of the nation's worst hazardous waste sites. Sites on the NPL are eligible for federal Superfund money.

Next, EPA usually conducts a (3) remedial

investigation (RI). The RI assesses the extent of the contamination, the type of contaminants present, and the potential risks to the community. Then EPA does a (4) feasibility study (FS) which examines the feasibility of various cleanup alternatives. A (5) specific cleanup plan is then chosen and designed. The choice of a cleanup plan is documented in the Record of Decision. After the project is designed, the actual cleanup can begin.

The time it takes to complete each of these five steps varies with every



Hazardous waste dump sites are evaluated in terms of possible health risks, potential hazards, water contamination, and environmental pollution. (File photo)

Once identified, potentially responsible parties are asked to participate in the cleanup.

site. In general, a remedial investigation/feasibility study takes from one to two years. Designing the cleanup plan may take six months. Implementing the remedy -- the actual containment or removal of the waste -- may take from one to three years. If groundwater is involved, the final cleanup may take several more years.

Ongoing activities during a clean-up include:

- Periodic monitoring of the site conditions. If a site becomes an imminent threat to public health or the environment during the normal course of an

RI/FS, EPA may conduct an emergency cleanup called either an immediate removal or an initial remedial measure.

- Public meetings and other community relations activities to keep citizens and officials informed and encourage public input are conducted throughout the remedial cleanup process. Specific activities vary from site to site, depending on the level and nature of community concern.
- Enforcement. Once a site is identified as

an NPL site, EPA undertakes a thorough investigation of which parties may be responsible for the waste contamination problem. This search for potentially responsible parties (PRPs) can and often does continue throughout the RI/FS process. Once identified, these parties are asked to participate in the cleanup. The nature and extent of a PRP's involvement in a cleanup action can be determined through negotiations with EPA or through court action.



New Legislation

Acts of environmental significance from the 1985 Session of the General Assembly

*By Glen Gross, Principal Environmental Analyst
and Tess Gutowski, Sr. Environmental Analyst
Photos by Robert Paier*

- Third of a Series -

S.A. 85-69: AN ACT APPROPRIATING FUNDS TO THE DEPARTMENT OF ENVIRONMENTAL PROTECTION FOR FIRE FIGHTING EQUIPMENT.

This Special Act directs \$65,000 to the DEP for the

purpose of acquiring modern fire-fighting equipment.
Effective Date: July 1, 1985.

P.A. 85-175: AN ACT CONCERNING THE PLACEMENT OF

LOBSTER POTS IN OYSTER BEDS.

This act prohibits setting any mooring or setting or tending pots, traps, or other devices for catching lobsters on oyster grounds

without permission from the grounds' owner or lessee. Effective Date: October 1, 1985.

P.A. 85-183: AN ACT CONCERNING TAKING OF SHELLFISH FROM THE SAUGATUCK RIVER.

This act prohibits the taking of oysters or shellfish from the Saugatuck River between July 20 and September 20 (the oyster spawning period). This is already the law with regard to the Housatonic River. Violation is punished by up to 30 days in prison, a fine of up to \$100, or both. Effective Date: July 1, 1985.

P.A. 85-563: AN ACT ESTABLISHING A STATE MUSEUM OF NATURAL HISTORY.

This Public Act establishes a state museum of natural history that will be located at the University of Connecticut at Storrs.

The DEP commissioner shall be one of 15 board members; the board of directors is responsible for the planning and establishment of the state museum and shall recommend a director who is to be appointed by the president of the University of Connecticut. Effective Date: July 1, 1985.

P.A. 85-570: AN ACT CONCERNING A FISHING EDUCATION AND URBAN ANGLING PROGRAM.

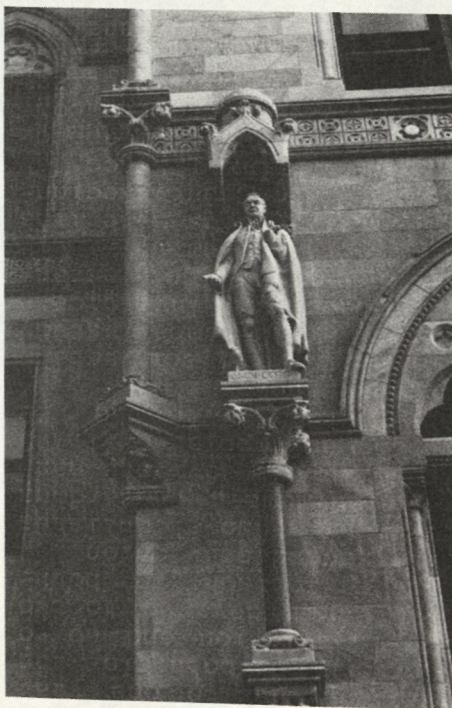
This act requires the Commissioner of the DEP to develop a fishing education and urban angling program. He must designate competent persons or organizations to give the instruction, free of charge, to anyone who requests it. The instructor must give a certificate to anyone who completes the program. Instructors will be covered by state-provided liability and property damage insurance while teaching.

The act appropriates \$71,000 to the DEP for this program for FY 1985-86.

Effective Date: July 1, 1985.

S.A. 85-107: AN ACT CONCERNING FUNDING FOR THE CONSTRUCTION OF A SAFETY BARRIER IN WALLINGFORD AND THE DEVELOPMENT OF A TEN YEAR PLAN FOR THE INSTALLATION OF NOISE BARRIERS.

This Special Act directs the DOT to use any remaining funds appropriated to PA 85-428 (section 1) for the purpose of (1) noise retesting along certain sections of state and interstate highways, (2) revisions to DOT's noise



barrier priority list, and (3) development of a ten-year plan for the installation of noise barriers. Effective Date: July 1, 1985.

P.A. 85-483: AN ACT CONCERNING WATER SUPPLY EMERGENCY ASSISTANCE GRANTS.

This act authorizes the sum of \$700,000 in bonds for water supply emergency assistance grants to private water utilities supplying 25 to 999 customers. The grants are for repair, rehabilitation, interconnection, or replacement of facilities or

equipment. Grants are available: (1) if a company fails to provide water due to equipment or facility failure, and (2) if the Commissioner of Economic Development, upon recommendation of the Department of Public Utility Control, determines that the company is financially unable to restore service immediately, and there is no alternative water company reasonably able to supply water immediately. Effective Date: July 1, 1985.

P.A. 85-390: AN ACT CONCERNING CIVIL PENALTIES FOR HAZARDOUS WASTE VIOLATIONS.

This Public Act makes it clear that the current fine of up to \$25,000 per day for certain hazardous waste violations is a civil penalty, not a criminal penalty. Effective Date: October 1, 1985.

P.A. 85-336: AN ACT CONCERNING SALE OR ABANDONMENT OF PUBLIC WATER SUPPLY LANDS.

This Public Act establishes additional conditions and procedures for the sale or abandonment of water company land or water sources. The Public Act authorizes the commissioner of health services to permit the sale of Class I lands (those located closest to water sources or which are particularly sensitive environmentally) to water companies or municipalities that agree to maintain them in their current condition. Prior law banned the sale of Class I lands. The Public Act also allows the commissioner to reclassify Class I and Class II land (water company land in a public drinking supply watershed that does not meet Class I criteria, or areas outside the watershed that are within 150 feet of a reservoir or a reservoir feeding stream) only when a water supply source has

been abandoned or a watershed boundary undergoes physical change. Finally, the Public Act requires that Class I land-use changes conform to water supply plans, in addition to meeting the prior requirement that the applicant demonstrate that the change will not harm the present and future purity and adequacy of the public drinking water supply. Effective Date: June 16, 1985.

P.A. 85-436: AN ACT CONCERNING MUNICIPAL SOLID WASTE DISPOSAL AND THE STATEWIDE SOLID WASTE MANAGEMENT PLAN.

This Public Act sets a January 1, 1987, deadline for a municipality to submit to the DEP its 20-year solid waste management disposal plan. The commissioner of the DEP shall approve or disapprove any plan submitted. This Public Act establishes an appeal procedure; should a municipality fail to have an approved plan, the municipality will be required to manage its solid waste in accordance with the statewide solid waste management plan.

The Public Act requires the commissioner of the DEP to adopt regulations establishing procedures for adopting and amending a statewide solid waste management plan. Adoption of the statewide solid waste management plan must be completed by January 1, 1987. Effective Date: June 25, 1985.

P.A. 85-590: AN ACT CONCERNING THE FAILURE TO PREPARE A HAZARDOUS WASTE MANIFEST AND MAINTAIN RECORDS WITH RESPECT TO HAZARDOUS WASTE, AND ESTABLISHING A HAZARDOUS AIR POLLUTANT ADVISORY PANEL AND ESTABLISHING A TASK FORCE TO STUDY THE FEASIBILITY OF FLAMMABLE LIQUIDS, HAZARDOUS MATERIALS, AND HARTFORD COUNTY REGION-

AL FIRE TRAINING SCHOOL.

This act makes it a crime where a person willfully fails to prepare or maintain a hazardous waste manifest as required by law and regulations. An existing penalty applies of up to \$25,000 for each day of violation, up to one year in prison, or both, for the first conviction and up to \$50,000 per day, up to two years in prison, or both, for a second conviction.

The act also establishes a seven-member hazardous air pollutant advisory panel, and appropriates \$1,400 for FY 1985-86 to the DEP for the panel.

Finally, the act establishes a 15-member study committee to investigate the feasibility of establishing a Flammable Liquids, Hazardous Materials and Hartford County Regional Fire Training School at Bradley Airport and appropriates \$20,000 to the committee for FY-86. Effective Date: October 1, 1985, for the manifest penalty, and July 1, 1985, for the remainder of the act.

P.A. 85-334: AN ACT CONCERNING SOLID WASTE PERMITS AND ORDERS AND MUNICIPAL

DESIGNATION OF REFUSE DISPOSAL AREAS.

This Public Act expands current requirements for solid waste permits and orders by:

a.) requiring that solid waste facilities obtain operating permits in addition to required construction and alteration permits;

b.) specifying which modifications require an alteration permit;

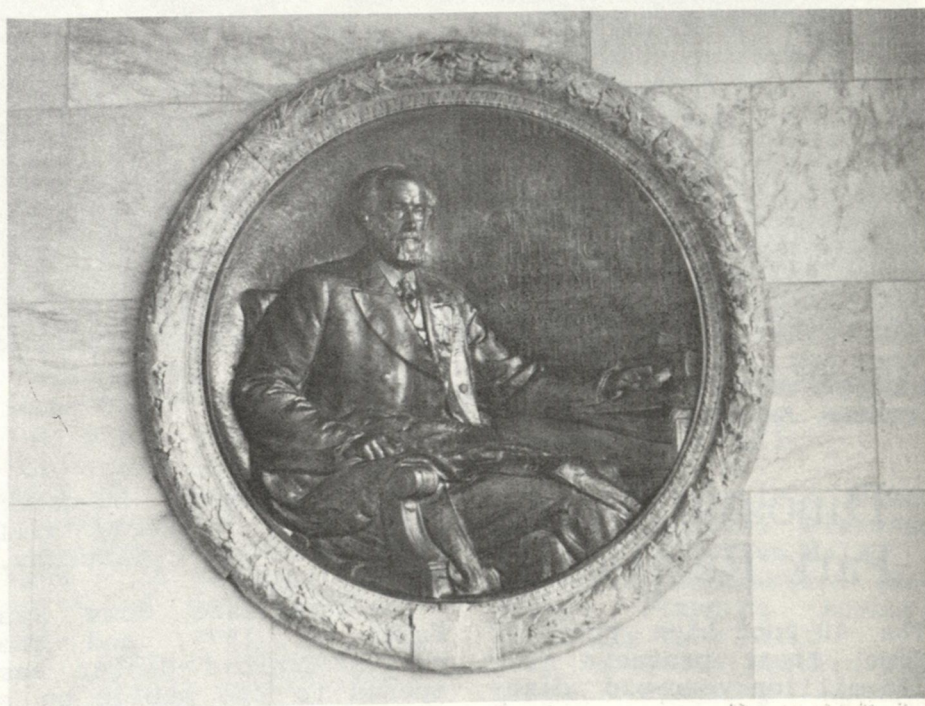
c.) requiring that provisions for pollution monitoring, facility closure, and post-closure maintenance be incorporated in existing and proposed facilities;

d.) allowing the commissioner to require the presence of qualified operators at solid waste facilities and to establish training requirements;

e.) establishing provisions to penalize violations of a final order; and

f.) specifying when public hearings on permits and orders are required, and when hearings are to be held at the commissioner's discretion.

Effective Date: June 16, 1985. ■





Eight feet tall and 20 feet long, *Dylophosaurus* ("Double-armed Lizard") left his tracks in Connecticut 185 million years ago.
(Photo: Jeanne Shelburn)

Dinosaur State Park Reopened

The 40-foot-high geodesic dome that protects the 185-million-year-old dino-

saur trackway at Dinosaur State Park in Rocky Hill reopened on Saturday, October 12th.

The geodesic dome was built in 1977, and the park's Exhibit Center was opened to the public on a

temporary basis. The new construction, which began in March, 1984, completed the interior of this unique structure which covers 500 in situ dinosaur tracks. The building now contains a 100-seat auditorium, exhibit hall, and discovery room. A boardwalk over the trackway now, for the first time, lets visitors get a close-up view of the tracks. There are also new heating, air-conditioning, and lighting systems.

The park's grounds have been improved with a new dinosaur footprint-casting area and new picnic grounds. Visitors will find tourist information in the lobby along with a bookstore specializing in dinosaur books for young and advanced readers.

After October 12th, the Exhibit Center, which attracts dinosaur enthusiasts from all over the world, will be open Tuesdays through Sundays from 9 a.m. to 4:30 p.m. Visitors may bring 10 pounds of plaster to make casts. There is no admission charge. ■

Lecture Series Announced

The following illustrated lectures will be presented by the Friends of Dinosaur Park:

Tuesday, Nov. 12 -- "Interpretation of Dinosaur Footprints." The Connecticut Valley is one of the best areas in the world for finding dinosaur footprints. A history of footprint discoveries in the Valley will be given. What can be learned about dinosaurs by examining their footprints? (Dr. Walter Coombs: Associate Professor of Biology at Western New England College.)

Tuesday, Dec. 3 --

"plant-eating Dinosaurs." A review of herbivorous dinosaurs and their adaptations will be given. (Dr. Peter Galton: Professor of Biology at the University of Bridgeport.)

Tuesday, Jan. 14, 1986
-- "Peabody Museum of Natural History: The Great Hall." This talk focuses on Rudolph Zallinger's famous "Age of Reptiles" mural and its relationship to various specimens in the Great Hall. (Mr. Stephen Broker: Associate Director of Graduate Liberal Studies Program at Wesleyan University.)

Further lectures in the series will be announced later.

Time: 7:30 pm.

Place: Dinosaur State Park, West Street, Rocky Hill.

Donation: \$2.00 (\$12.00 for a series ticket): purchase tickets at door or call 529-8423.

Each lecture will be followed by a question-and-answer period and coffee. ■

Not Just a Geology Book

Have you ever puzzled over the shape of Connecticut's rolling hills? Are you intrigued by abandoned mills and fieldstone walls? Does the complexity of Connecticut's geologic history leave you holding your head? Michael Bell explains these puzzles and unites them into a fascinating story in The Face of Connecticut: People, Geology, and the Land.

With a light, anecdotal style, Bell weaves a story that (unlike most geologic accounts) won't take a gallon of coffee to get through. The book ties the landscape to geologic history, relating the cities, suburbs, farms, and forests

of the present day to the primeval movements of continents. Extensively illustrated with maps, drawings, landscape photographs (both color and black and white), and old lithographs, the 228 pages of The Face of Connecticut make a lasting visual as well as literary impression.

The Face of Connecticut is priced at \$12.95 per copy, plus \$2.00 handling charge. Connecticut residents add 7.5 percent sales tax on the list price. It may be purchased through The Natural Resources Center, Publication Sales, Rm. 555, 165 Capital Avenue, Hartford 06106, telephone: 566-7719. The book is also available through local book stores.

For a special Christmas present for a special person, The Face of Connecticut may be just what you're looking for. ■

Off-season Camping

Western District
485-0226

American Legion State Forest - Austin Hawes campground - 15 sites. Midway between Pleasant Valley and Riverton on West River Road.

Housatonic Meadows State Park - 25 sites. 1 mile north of Cornwall Bridge on Rte. 7.

Kettletown State Park, Pump Field - 30 sites. 3 1/2 miles south of I-84, Kettletown Rd., to Georges Hill Rd., 0.7 mile to entrance.

Macedonia Brook State Park - 15 sites. 4 miles north of Kent, off Rte. 341.

Eastern District
295-9523 or 344-2115

Cockaponset State For-

est - 12 sites. 2 1/2 miles west of Chester on Rte. 148; north on Cedar Lake Rd., 2 miles.

Pachaug State Forest, Mt. Misery Area - 22 sites. Off Rte. 49, north of Voluntown.

Mashamoquet Brook State Park - Pomfret, Indian Chair Youth Group Area - Open Nov. 1 until Feb. 28. Camping by advanced arrangements only. Phone 928-6121 between 8:00 a.m. and 3:30 p.m. ■

SCORP Forums Scheduled

SCORP (Statewide Comprehensive Outdoor Recreation Plan), is a process by which the state's outdoor recreation programs are evaluated. The assessment leads to recommendations to local town officials/recreational directors in response to the needs of citizens. Below is a listing of the open forums. Further information may be obtained from the Department of Environmental Protection, 566-5026, or your local planning agency. (All meetings begin at 7:30 p.m.)

November

20 -- Valley Regional Planning Agency, Shelton City Hall. (7:00 p.m.)

21 -- Southeastern Connecticut Regional Planning Agency, University of Connecticut Agriculture Extension Office.

26 -- Greater Bridgeport Regional Planning Agency, Trumbull Town Hall.

December

2 -- Connecticut River Estuary Regional Planning Agency, Essex Town Hall.

4 -- Northeastern Regional Planning Agency, Killingly Town Hall.

16 -- South Western Regional Planning Agency, Norwalk Community Library. ■

Trailside Botanizer

Evening Primrose

By G. Winston Carter

Illustration by Pam Carter

The evening primrose is a common plant of roadsides, fields, and meadows. It is easily recognized in the summer by its attractive yellow flowers and, in the late fall and winter, by its woody fruit capsules.

This species forms a basal rosette of leaves the first year of its life. If the rosette is large enough, the plant will flower the following year. Some individual plants with smaller rosettes may not blossom until the third year.

The evening primrose can grow as high as six feet, but is usually much shorter. It has alternate leaves that are somewhat lance-shaped. The stem is angular and often reddish.

The showy flowers are crowded toward the top in a



spike-like arrangement and appear between July and September. Each flower has four lemon-colored petals. There are eight stamens and a single ovary with a conspicuous cross-shaped stigma at the top. The four green sepals at the base of the ovary are bent sharply backwards.

The name evening primrose alludes to the flower's habit of opening only at night, generally between 4:00 p.m. and 10:00 p.m. It is believed to be pollinated by large nocturnal moths.

The woody fruit capsule, which is about one inch in length, appears in the fall. As it dries, it splits backward into four sections. Each section is lined with two rows of tiny brown seeds that are dispersed by the wind.

The plant has long been used as a medicine for a variety of purposes, especially for healing wounds. In recent years, chemicals from the seeds offer promise in treating blood clotting, multiple sclerosis, and schizophrenia. The roots of the first-year rosette, if collected during the winter months, may be eaten, but must be boiled long enough to remove the peppery taste.

In the fall and winter, many people like to use the attractive fruit capsules in dried flower arrangements.

© 1985 by G. Winston Carter.

Letters To The Editor

I consider the Bulletin an excellent publication, one I always read. Quality in content is more important

than glossy format.

Mrs. Helen B. Loveless
Cromwell

Penni Sharp's "Nature Notes" articles are great. I've really been learning from them.

Joseph Latka
Seymour

Having been a resident of Connecticut for 82 years, I thought there could be few surprises for me in the state. Now, as a new reader of the Citizens' Bulletin, I am rediscovering old places and becoming aware

for the first time of many new areas of the state.

I am very proud to be a Connecticut Yankee and happy about what the DEP and the Citizens' Bulletin are doing to keep our state clean and beautiful.

Mrs. Harold Walsh
West Haven

Readers are invited to share their views on Connecticut and the environment. Please let us hear what you think. Letters should be no more than 250 words, are subject to editing, and should be accompanied by name, address, and phone number.

"The Connecticut Department of Environmental Protection in an equal opportunity agency that provides services, facilities, and employment opportunities without regard to race, color, religion, age, sex, physical or mental disability, national origin, ancestry, marital status, or political beliefs."

The Night Sky

And, lest we become too complacent,
there's always

The Death Star

By Francis Downey, Director, Gengras Planetarium

Sixty-five million years ago, proud and powerful dinosaurs ruled uncontested over all the Earth. Then, suddenly -- and possibly very suddenly -- they disappeared, leaving footprints, bones, and a great mystery. Today, no one knows, for sure, what happened to the dinosaurs.

A fascinating theory involves a mysterious "death star" and a cloud of comets at the very edge of our solar system.

According to this theory, every once in a while a comet falls out of that cloud and begins a long journey toward the sun. After travelling for millions of years, the comet enters the solar system. As the cosmic "snowball" gets closer and closer to the sun, it begins to melt and the comet's long tail, extending millions of miles into space, is formed. After the comet rounds the sun, it begins its long journey back into the frozen depths of space.

A single comet is relatively harmless. But if thousands, or millions, of comets were to fall out of the comet cloud at the same time, the chances of one of them hitting the Earth would increase. Some astronomers think this might be what happened 65 million years ago.

Out in the icy fringes of the comet cloud, there might be a small, dark companion to our sun. Scientists have named this hypothetical star, Nemesis, the

Death Star. Nemesis' gravity might disturb the comet cloud, periodically sending millions of comets out of the cloud. After traveling through space for untold ages, the comet swarm would arrive near Earth. Imagine what the night sky might have looked like -- not one comet in the sky, but dozens, and one of these on a collision course with Earth.

If the strike happened in the daytime, the comet would have been invisible until 40 seconds before impact. At 10 seconds before impact, the comet would have looked like a falling, fiery mountain. And then the comet would have ripped into the Earth. The dust raised by the explosion would have stayed in the atmosphere for about a year. It would have blocked the sun. Those dinosaurs which survived the explosion, which did not starve, not being warm blooded, would have frozen to death.

The Great Extinction that occurred 65 million years ago is not the only one. They seem to happen every 26 million years, the last happening 11 million years ago. If the Nemesis theory is correct, and the comet swarm is unleashed every 26 million years, we should have another 15 million years of relative calm. However, there may be other things in store for us.

It is now believed that following a nuclear war, the Earth might be plunged

into a "nuclear winter," a period of many months of darkness, freezing temperatures, and the extinction of most life forms. We may be our own Nemesis. Unlike the dinosaurs, however, we can see what's coming, and maybe we can change things. Maybe.

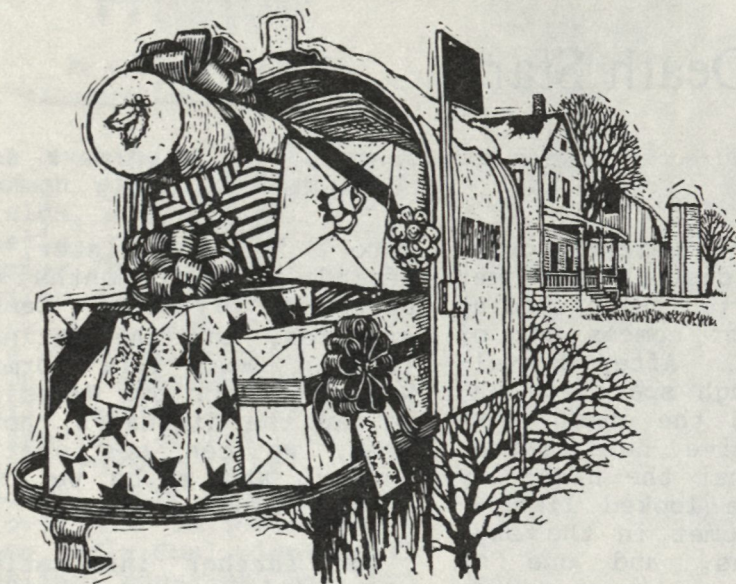
For further information on activities and programs at Gengras Planetarium, please write Children's Museum of Hartford, 950 Trout Brook Drive, West Hartford, CT 06119, or phone (203) 236-2961. ■

Endnote

"Don't forget,"
I whisper
to the peepers,
"we are all in this
together."

Joseph Wood Krutch
Twelve Seasons
William Sloane, 1949

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